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AUTHOR(S):

THANT, SOE; LWIN, MAUNG MAUNG

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Distribution of Hawksbill Turtles (*Eretmochelys imbricata*) in Longlonebok Island and its Adjacent Area in Myanmar

SOE THANT¹ AND MAUNG MAUNG LWIN² *Deputy Fisheries Officer, Longlone Township Department of Fisheries, Tanintharyi Region, Myanmar*

²*Assistant Director, Crocodile Farm and Sea Turtle Conservation and Management Unit, Department of Fisheries, Myanmar*

ABSTRACT

Tanintharyi Region has a rich marine biodiversity including five marine turtle species. Tanintharyi Coast is a marine biosphere and it is unique for sea grasses and corals ecosystems. Most of hawksbill turtles (*Eretmochelys imbricata*) are currently found near Longlonebok Island and its adjacent areas compared with other areas in Myanmar. Hawksbill turtles were listed as endangered on the IUCN Red List in 1986. The hawksbill turtles are reported to be killed in fishing activities. Department of Fisheries of Myanmar received invaluable information on hawksbill turtles within that year. At present information on hawksbill turtles can be collected from fishermen and local people participating in conservation and management activities of marine turtles. This paper described and discussed the sizes of hawksbill turtles found in the areas. There are still gaps in knowledge of the biological characteristics as well as habitats. Most of the divers found the hawksbill turtles underwater when collecting for lobsters and sea cucumbers. Participation of fishermen and local people are better than past decades. However repeated awareness and education programmes regarding marine turtles are still needed.

Keywords: Longlonebok Island, hawksbill turtle distribution, fishing activities, awareness and education

INTRODUCTION

Conservation of sea turtles has been initiated in Myanmar since 1963. The conservation activities were not profound until 1997 when Myanmar became a member of the Association of South East Asian Nations (ASEAN). Since Myanmar became a member of the Southeast Asian Fisheries Development Center (SEAFDEC), the integrated fisheries development and conservation of the resource activities and implementation have been boosted appropriately.

Tanintharyi Region is situated in the southern part of Myanmar in the Andaman Sea. It has a rich marine biodiversity including five marine turtle species: leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), green (*Chelonia mydas*), olive ridley (*Lepidochelys olivacea*) and hawksbill (*Eretmochelys imbricata*) turtles. They have been found along the Tanintharyi Coast. The hawksbill turtles and green turtles are the most common among five turtle species existing in the Tanintharyi Region. The Tanintharyi Coast is a marine biosphere and it is unique for sea grasses and corals ecosystems. The Department of Fisheries (DoF) has set to propagate and conserve marine turtles on Longlonebok Island in Longlone Township, Tanintharyi Region since 2005. Regarding marine turtle conservation and management, marine turtle hatching, hatchling releasing, tagging, study on interaction of marine

information gathering, education and training programme are being conducted at Longlonebok Island and its adjacent areas. Hawksbill (*Eretmochelys imbricata*) turtles were listed as endangered on the IUCN Red List in 1986. Hawksbill turtles are being killed because of their beautiful carapace. In Myanmar before activities had started on conservation and management of marine turtles, carapace of the hawksbill turtle were used as combs, broaches and some ornamental materials, and also for taxidermy.

LONGLONE BOK AND ITS ADJACENT AREA CONCERNING HAWKSBILL TURTLES AND ITS ECOSYSTEMS

Longlone Bok Island (South Moscos) is situated in 13°55' N 97°52' E (Fig 1).

There are 8 beaches in Longlone Bok Island. They are Thae Pa Loke Aw, Ngayauk Kaung Aw, Nyaung Bin Yaing Aw, Leik Thaung Gyi beach, Thaung Bya beach, Ohn Bin Thaung, Thaung Thaung and Thaung Nan Aw. Sand type of the beaches is coralline. Length and width of the island is 10.5 miles and 1.5 mile respectively.

turtles, fishing activities, public awareness,

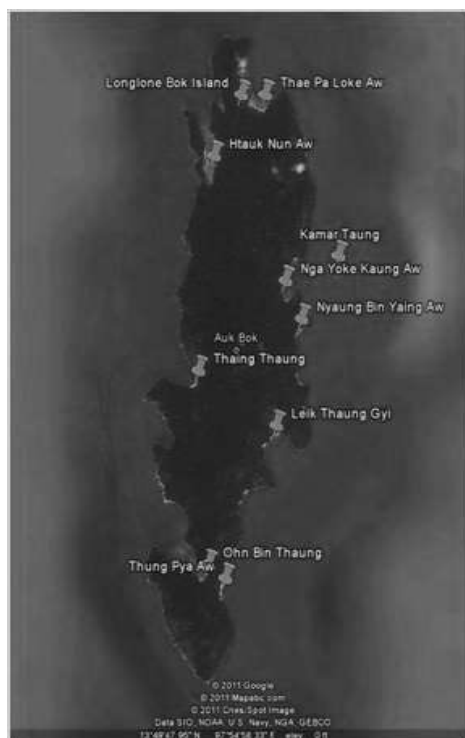


Figure 1. Map of Longlone Bok Island

Maung Ma Gan Bok Island (Middle Moscos) is situated in 14°51' N 97°48' E. There are 6 beaches in that Island. They are Sutt Swa Aw, Myauk Che Byin Aw, Pho Khaung Byin Aw, Dani Htauk Aw, Khway Maw Aw and Thae Pa Loke Aw. The sand type of the beaches is coralline. Length and width of the Island is 6 miles and 2 mile, respectively (Figure 2).



Figure 2. Map of Maung Ma Gan Bok Island

HAWKSBILL TURTLE

Hawksbill turtles are reported to be killed in fishing activities incidentally. In Longlone Township before the activities had started on conservation and management of marine turtles, this kind of species were also being killed intentionally because of its beautiful carapace which was used as combs, broaches and some ornamental materials, and also for taxidermy. Most of the hawksbill turtle are mainly found near Longlone Bok Island and it's adjacent areas compared with other areas in Myanmar. The hawksbill turtles and green turtles are the most common among the five turtle species existing in Longlone Bok Island and it's adjacent areas of Tanintharyi Region.

Marine turtle conservation activities were studied at Longlone Bok Island where the activities were only started six years ago. DoF received invaluable information on hawksbill turtles within year 2008 to 2010. At present, information on hawksbill turtles can be collected because of the participation of fishermen and local people in conservation and management activities of marine turtles.

There are still gaps in knowledge of the biological characteristics as well as habitats of hawksbill turtles. Information on adult Hawksbill Turtles and their nests has not yet been received in Longlone Township.

Gill net users should inform DoF when they catch turtles incidentally, including hawksbill turtles. Some time hawksbill turtles are trapped in ghost fishing net, and sometimes fishermen found hawksbill turtles on a floating vegetation barge (raft). Most of the divers informed to DoF when they found the Hawksbill turtle underwater when collecting for Lobsters and Sea Cucumbers.

Regarding marine turtle conservation and management of hawksbill turtles, tagging, tissue sampling, study on interaction of hawksbill turtles and fishing activities are conducted at Longlonebok Island and it's adjacent areas.

From 2008 to 2010 Longlone Township DoF received twelve (12) captured hawksbill turtles from gill net fishermen (Table. 1). One hawksbill died at that time because of severe injury. Regarding this, fishermen's participation in conservation and management activities are better than before 2005. Six of the captured turtles were received in August 2010. Awareness of fishermen and their family was rather high because of DoF effort. As mentioned before, some fishermen might be afraid that action would be taken against them under the Laws and Regulations.

Table 1. Some Relevant Information of Captured Hawksbill Turtle

Nos.	Captured Date	CCL (Cm)	CCW (Cm)	Weight (Kg)	Status
1	22 Jan 2008	40	36	N/A	Successfully Released
2	5 Jul 2010	25	21	2.4	Successfully Released
3	19 Jul 2010	27	21	1.5	Successfully Released
4	3 Aug 2010	38	34	4.4	Successfully Released
5	12 Aug 2010	34	30	2.8	Death because of exhaustion
6	18 Aug 2010	29	25	1.6	Successfully Released
7	18 Aug 2010	36	33	2.9	Successfully Released
8	20 Aug 2010	32	29	2.4	Successfully Released
9	20 Aug 2010	29	26	1.6	Successfully Released
10	30 Aug 2010	43	38	4	Successfully Released
11	10 Sep 2010	38	35	3.7	Successfully Released
12	26 Sep 2010	34	31	2.4	Successfully Released

SEA GRASS

Sea grass beds are crucial as feeding area not only for marine turtles and some endangered species, but also for herbivorous species which they rely on. Six species of sea grass were found in Longlone Bok Island and its adjacent areas. Those were *Halodule uninervis*, *Halodule pinifolia*, *Syringodium isoetifolium*, *Cymcocea rotundata*, *Holophila ovalis* and *Holophila decipiens*. Sea grass beds were found at Thae Pa Loke Aw, Myin Kwar Aw, Nyaw Pyin Aw and Yaw Kann in Longlone Bok Island and its adjacent area (Table 2 and Fig 2).

Table 2. Sea Grass in Longlone Bok Island and its Adjacent Areas

Place	GPS Coordinate	Species	Area (Sqft)	Threat
Thae Pa Loke Aw	13 °51' 52.97"N 97°55' 10"E	<i>Holophila ovalis</i> <i>Halodule pinifolia</i>	50,000	Sand Covering
Myin Kwar Aw	13 °34' 07.84 "N 98°08' 42.16" E	<i>Holophiladecipiens</i>	75,000	
Nyaw Pyin Aw	13 °38' 06.17" N 98°06' 26.12 " E	<i>Holophila decipiens</i> <i>Holophila ovalis</i> <i>Halodule uninervis</i>	300,000	Sand Covering
Yaw Kann	13 °41' 26.78"N 98°07'02.14" E	<i>Cymodocea rotundata</i> <i>Syringodium isoetifolium</i>	280,000	



Figure 2. Sea Grass Found in Study Area

CORALS

Twenty nine species of corals were found in Longlone Bok Island and its adjacent areas (Table 3 and Fig 3). Longlone Bok Island and its adjacent areas has 5 coral beds. These are Kamar Taung, Thae Pa Loke Aw, Nyaw Pyin Beach and Petzin Island. Identification of coral species are under detailed processing in cooperation with Myeik University in Thanintharyi Region.

Table 3. Corals beds in Longlone Bok Island and its Adjacent Areas

Place	GPS Coordinate	Nos. of Sp.	Threat	Remarks
Kamar Taung	13 °50'34.06"N 97°55' 50.47" E	18	-Inshore Fishing Activities	Most of the corals are still alive
Thae Pa Loke Aw	13 °521' 52.97"N 97°55' 10"E	7	-Covered with sand, swamp - Fishing vessels come to take shelter	Most of the corals are alive
Nyaw Pyin Beach	13 °38' 06.17 "N 98°008' 26.12"E	4	-Sand, Swamp -Inshore Fishing Activities	Most of the corals are alive
Sutt Swa Aw	14 °09' 52.82 "N 97°47' 02.20 "E	5		Information still being collected
Pezin Island	13 °48'25.25" N 98°053' 46.25" E	4	-Inshore Fishing Activities	Information still being collected

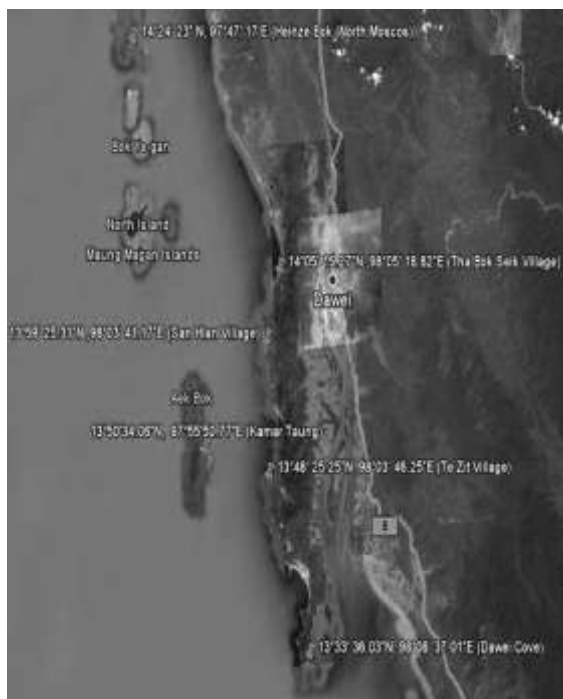


Figure 3. Corals beds in Longlone Bok Island and it's Adjacent Areas

FISHING ACTIVITIES

Under the Longlone Township, fishermen from 16 villages were depending on inshore fisheries for their livelihoods. An average 1452 fishermen per year are depending on inshore fisheries.

Table 4. Fishers Population by villages

Sr. No.	Village	2006	2007	2008	2009	2010
1	Maung Ma Kan	85	95	87	90	164
2	Pann Tin Inn	243	334	251	294	358
3	Tha Bot Seik	324	215	320	230	488
4	Pa Nyit	30	33	26	23	24
5	Te Zit	70	54	185	88	120
6	San Hlann	80	15	90	100	162
7	Auk Ye Phyu	3	6	5	3	4
8	Tha Pye Shaung	32	45	42	34	26
9	Taw Kye	14	10	6	7	20
10	Tha Kyet Taw	17	16	41	39	72
11	Za Lut	80	40	42	42	72
12	Kyauk Ni Hmaw	80	150	217	287	146
13	Kyauk Wut Pyin	9	8	7	8	22
14	Nyaw Pyin	34	90	80	80	148
15	Kyet Lutt	49	45	40	42	96
16	Ka Nyun Kyun	37	48	53	58	96
Total		1187	1204	1429	1425	2018

In Longlone Township DoF has also prohibited the use of fishing gears having harmful effects on sea turtles by mandatory rules and regulations, notifications and Marine Fisheries Law (1990). The measures are well encouraged. It is important that fishery workers make and learn how to use a type of fishing gear, which will be effective in catching fish but harmless for turtles.

Some villagers and fishermen inform that when they catch turtles in their fishing nets they release the turtles back into the sea. Moreover, fishermen have been instructed to release turtles back into the sea unharmed if they are catch accidentally in their fishing gears.

The fishermen and their families living in the villages report to DoF and the turtles which are captured incidentally are treated and released showing their cooperation with DoF.

Although DoF is carrying out the marine turtle conservation under many difficulties, it is also (with whatever source available) protecting the decrease in population of marine turtles because of death and injury caused by the fishing activities.

In Longlone Township, it was learnt that the majority of fishing gears are gill nets. The most harmful fishing gears for marine turtles are reportedly gill net, trammel net and trawlers from outside Longlone Bok Township. Also ghost nets are a major cause of death.

AWARENESS AND EDUCATION

The DoF is deeply aware of such necessities for effective sea turtle conservation. The following awareness activities have so far been undertaken in its input capacity. Through these, participation from the communities is acquired and somehow provides effective conservation of sea turtles. The public needs to be widely educated and informed for the conservation and protection of sea turtles. For this purpose the DoF is educating the fishermen and public living in the coastal areas on the conservation and protection of marine turtles by:-

- Distribution of pamphlets and posters
- Erection of signboards at landing sites, market places and at the central place of the community to educate the public
- Holding of talks on the conservation of marine turtles by DoF staff, to local authorities, fishermen, local people, school children and teachers.
- Distribution of questionnaires to all stakeholders and tag wanted posters at fishery communities for acquiring information and feedback from the majority.
- Organizing local community to participate in safeguarding the nesting turtles, protect turtle nests from destruction by the exploiters and permit escape of accidentally caught in fishing nets.

CONCLUSION

Figure 4 shows the population of fishermen by year. Regarding the fishermen's apparent population increase in year 2010 from previous years, DoF could not collect the license fees because of insufficient staff.

The DoF finds difficulties in getting the feedback from fishing vessels and fishing villages regarding the marine turtles because of:-

- Inaccuracy of the feed back
- Holding back what they knew (being afraid that action will be taken against them according to existing Laws and Regulations)
- Insufficient transportation and communication equipments
- The fishing vessel owners and the fishermen are placing their personal interests in the frontline.

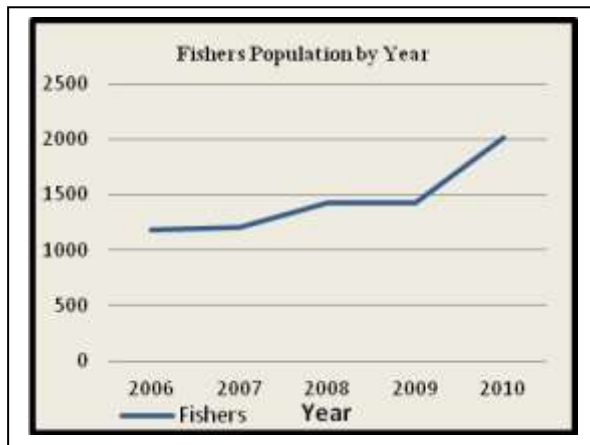


Figure 4. Fishers Population by Years

One of the main factors which cause decrease in population of marine turtles is the fishing activities in the sea, and draws awareness to the importance of the people living in the coastal areas to cooperate in conservation activities, in order to know the population of the marine turtles. To lessen the death of sea turtles due to fishing activities the Township DoF has laid down the following guide lines:-

- to cooperate more with local authorities, Dawei District Fisheries Federation and other relevant organizations which participate in the conservation activities
- to promote the cooperation between inshore fishing entrepreneurs, fishermen, local fishermen, and local people, regarding the sea turtle conservation

Sea grass and corals are a very important ecosystem. Everybody knows that hawksbill turtles are depending on sea grasses and coral areas as a

feeding ground. Therefore inshore fishing entrepreneurs, fishermen, local fishermen, local people participation need to conserve and protect sea grass pasture and coral reefs.

According to the 12 turtles received by DoF, the range of CCL and CCW was 25- 43 cm and 21- 43 cm respectively. Average CCL and CCW was 33.75 cm and 29.92 cm, respectively. Average weight of these turtles was 2.7 kilogram kg and range of the weights were 1.5 to 4.4 kilogram. All of the captured hawksbill turtles were in the immature stage. DoF collected tissue samples, tagged and release back these turtles to the sea.

The marine water of Longlone Township seems to be a migratory pathway and also feeding ground for hawksbill turtles (Fig 5). Regarding feeding grounds, possible areas for both sea grass and corals are at Thae Pa Loke Aw and Nyaw Pyin Beach.



Figure 5. Suspected Feeding Ground and Migratory Pathway of Hawksbill Turtles

In this regard, DoF and local people should consider to conserve and protect these two areas with priority. Gill net fishing gears might kill severely marine turtles. In Longlone Township, according to the data of gill net fishing gears DoF should collect more information on marine turtles as a priority.

Participation of fishermen and local people is better than past decades regarding conservation and protection of marine turtles. However repeated awareness and education programmes regarding marine turtles are still needed. DoF had never received information regarding hawksbill turtles before 2008. In 2010, DoF received tremendous

information about hawksbill turtles. Because Longlone Township fisheries staff repeatedly distribute important information on marine conservation and management, they are making their best effort in their respective Township. Tissue samples were collected from all of the live hawksbill turtles which were sent to SEAFDEC-MFRDMD. DoF understands the importance of sea turtles and continues to carry out the activities such as:-

- i. organizing the concerned people to cooperate in the conservation activities
- ii. collect data on population
- iii. to get feedback from the different levels in the coastal areas

To reach the goal on the conservation of sea turtles, the prerequisites are listed as follows:

- a. Knowing the nesting beach and landing period for appropriate species.
- b. Avoid disturbances that may disrupt turtles from visiting the beach for nesting
- c. Creation of ambient environment for the turtle for nesting on the beach
- d. Safe guard the turtles visit to the beach and protect the eggs from exploitation for delicacy food and utilizing turtle products for handy crafts and utilities.
- e. Secure turtle beaches especially in the nesting period from turtle hunters and other activities carried out the beach
- f. Enhance the awareness program of the community people on conservation, and render protection to and prevention of death of sea turtle.

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